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| FRISHAUF, HOLTZ, GOODMAN & CHICK, PC | | | ZIMMERMANN, JOHN P | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|------------------------------|------------------------|---------------------|--|
| | 10/509,485 | TATSUTA ET AL. | |
| Examiner | Art Unit | | |
| John P. Zimmermann | 2809 | | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 23 March 2005.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-55 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-55 is/are rejected.

7) Claim(s) 40 and 48 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 27 September 2004 is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 27 September 2004.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .
5) Notice of Informal Patent Application
6) Other: ____ .

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Figures 19(A) & 19(B) as initially mentioned in the specification [Page 58, Paragraphs 3-4], and Unit 16 of Figure 33 as initially mentioned in the specification [Page 80, Paragraph 3]. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because Figure 39 Item 51 is labeled "Transporting Base" in the Drawing [Drawings - Page 23, Figure 39] and labeled "Transporting Table" in the Specification [Page 99, Paragraph 5 and following]. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing

on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention;" "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because it repeats information given in the title and refers to the drawings with numbers throughout. Correction is required. See MPEP § 608.01(b).

Art Unit: 2809

6. The disclosure is objected to because of the following informalities: Examples of some unclear, inexact or verbose terms used in the specification are: "geometric properties" [Throughout specification], "geometric property format" [Throughout specification], "the precision of the recording positions of the marks and the required precision of the geometric properties which are to be analyzed" [Page 5, Paragraph 4 and following], "the analysis results analyzed by the analyzing means so as to perform recording on the recording face of the recording medium by the recording means" [Page 12, Paragraph 5 and following] "the format storage means according to the thirtieth invention is integrally held by the recording means, for storing the geometric property format suitable for the recording means which integrally holds the format storage means" [Page 14, Paragraph 4 and following]. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

7. Claim 40 is objected to because of the following informalities: the claim is repetitive, stating "the format storage means is integrally held by the recording means..." followed by "the recording means which integrally holds the format storage means." Appropriate correction is required.

8. Claim 48 is objected to because of the following informalities: the claim and it's dependent claims are listed to be the method for use of the system of Claim 24 but only mention using the test chart of Claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. **Claims 3, 6, 8, 10, 14, 18, 19, 27, 29, 31, 33, 40, 41, 43, 44, 46, 47, 49, 54 and 55** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. **Claims 3, 6, 8, 10, 14, 18, 19, 27, 29, 33, 40, 43, 44, and 49** are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

12. **Claim 31** recites the limitation “the plurality of recording means” in line 20 on page 123. There is insufficient antecedent basis for this limitation in the claim. For purposes of applying prior art, the examiner interprets this as intending to read “a plurality of recording means.”

13. **Claim 41** recites the limitation “the transporting belt” in line 24 on page 125. There is insufficient antecedent basis for this limitation in the claim. For purposes of applying prior art, the examiner interprets this as intending to read “a transporting belt.”

14. **Claim 46** recites the limitation “the printer” in line 9 on page 127. There is insufficient antecedent basis for this limitation in the claim. For purposes of applying prior art, the examiner interprets this as intending to read “a printer.”

15. **Claim 47** recites the limitation “the ink-jet printer” in line 11 on page 127. There is insufficient antecedent basis for this limitation in the claim. For purposes of applying prior art, the examiner interprets this as intending to read “an ink-jet printer.”

16. **Claim 54** recites the limitation “the printer” in line 5 on page 129. There is insufficient antecedent basis for this limitation in the claim. For purposes of applying prior art, the examiner interprets this as intending to read “a printer.”
17. **Claim 55** recites the limitation “the ink-jet printer” in line 8 on page 129. There is insufficient antecedent basis for this limitation in the claim. For purposes of applying prior art, the examiner interprets this as intending to read “an ink-jet printer.”

Claim Rejections - 35 USC § 101

18. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

19. **Claims 1-23** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
20. **Claims 1-23** are directed towards printed matter. A mere arrangement of printed matter, though seemingly a “manufacture,” is rejected as not being within the statutory classes. See *In re Miller*, 418 F.2d 1392, 164 USPQ 46 (CCPA 1969); *Ex parte Gwinn*, 112 USPQ 439 (Bd. App. 1955); and *In re Jones*, 373 F.2d 1007, 153 USPQ 77 (CCPA 1967). See MPEP 706.03(a) [R-2] I A.
21. The claims do not “define either new features of structure or new relations of printed matter to structure, or both” and “substance or language of that which is printed may not constitute patentable subject matter”. “Where the sole distinction set out in the claims over the

prior art is in the printed matter, there being no new feature of physical structure and no new relation of printed matter to physical structure, such claims may not be allowed, it is only where the claims define either new features of structure or new relations of printed matter to structure, or both, which new features or new relations give rise to some new and useful function or effect or result that claims may be properly allowed.” Ex Parte Gwinn. A mere arrangement of printed matter on a sheet or sheets of paper does not constitute patentable subject matter”. In re Russel, 18 C.C.P.A. (Patents) 1184, 48, F.2d 668, 9 USPQ 181, and In re Reeves, 20 C.C.P.A. (Patents) 767, 62 F.2d 199, 16 USPQ 110.

Claim Rejections - 35 USC § 102

22. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

23. **Claims 1, 2, 7, 18, 21, 24, 30, 33, 34, 36, 46, 48, 51, 52, 54 & 55** are rejected under 35 U.S.C. 102(b) as being anticipated by **Komiya et al.**, (US 6,287,027 B1).

a. As related to independent claim 1, Komiya et al. teach a correction chart for use in an image correction apparatus for a printing apparatus (Komiya et al. – Abstract, Lines 3, 4, & 7); for image correction regarding a printhead (Komiya et al. – Summary, Column 5, Line 22); a recording medium having a recording face called a paper sheet (Komiya et al. - Description, Column 7, Line 24); and an image reader (Komiya et al. - Description,

Column 7, Line 56); which recognizes test charts in prior art that show a plurality of marks arrayed and recorded on the recording face of the recording medium based upon a predetermined geometric property format in a layout structure which allows measurement of a predetermined position of each mark through image processing, and at a pitch which allows discrimination between each mark and another marks through image processing (Komiya et al. – Figures 17A, 17B, and 17C shown below).

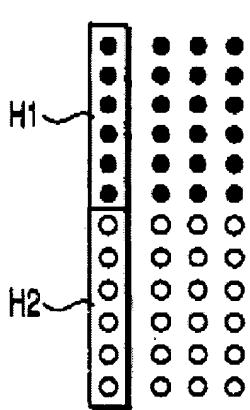


FIG. 17A
PRIOR ART

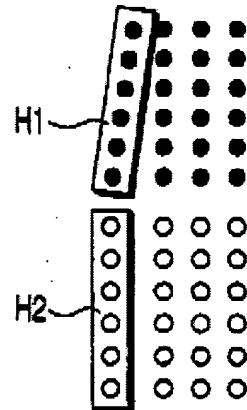


FIG. 17B
PRIOR ART

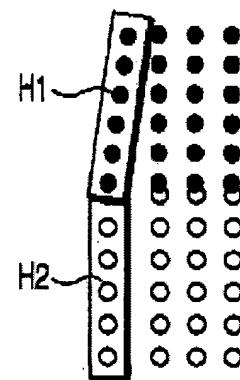
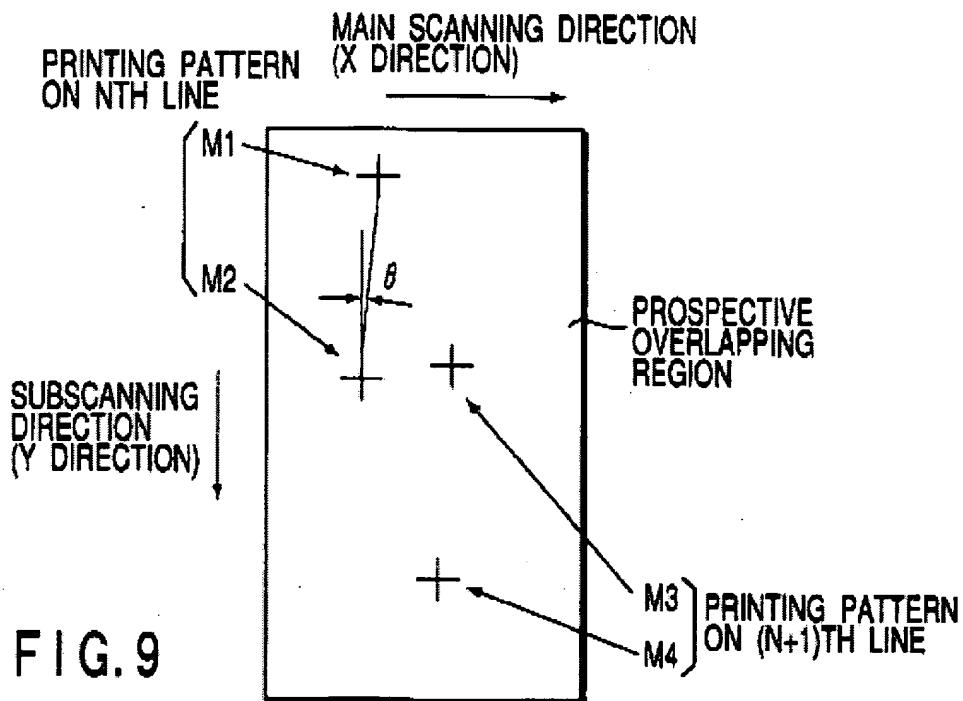


FIG. 17C
PRIOR ART

b. As related to dependent **claim 2**, Komiya et al. teach a geometric correction chart created by using a predetermined pattern necessary for geometric correction (Komiya et al. – Description, Column 7, Lines 50-54).

c. As related to dependent **claim 7**, Komiya et al. teach prior art showing each mark as a single dot (Komiya et al. – Figures 17A, 17B, and 17C shown previously), or a plurality of dots arrayed adjacent one to another so as to form a predetermined shape (Komiya et al. – Description, Column 10, Lines 10-13 and Figure 9 shown below).



d. As related to dependent **claim 18**, Komiya et al. teach the geometric correction chart with a first embodiment that sets the convey pitch smaller in one direction to avoid image distortion (Komiya et al. – Description, Column 7, Lines 34-39).

e. As related to dependent **claim 21**, Komiya et al. teach a test chart including reference marks recorded in a different form (Komiya et al. – Description, Column 11, Lines 46-47 and Figures 15 & 16 shown below).

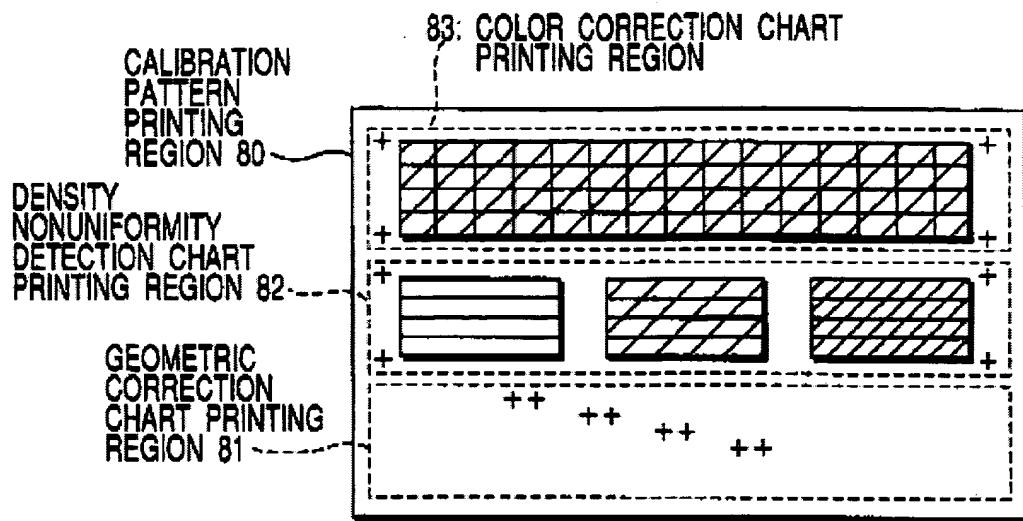


FIG. 15

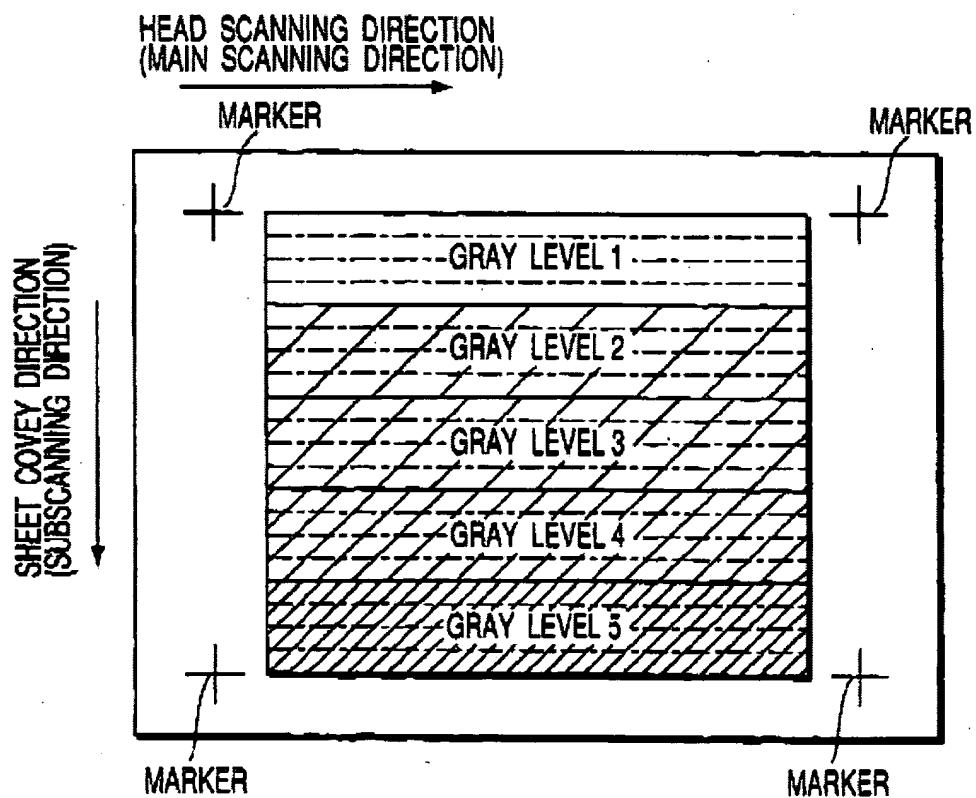


FIG. 16

f. As related to dependent **claim 24**, Komiya et al. teach an analyzing system for analyzing the properties of a printer, a reader, and the recording medium, this system includes a image pickup means and an analyzing means (Komiya et al. – Abstract and Figure 6 shown below).

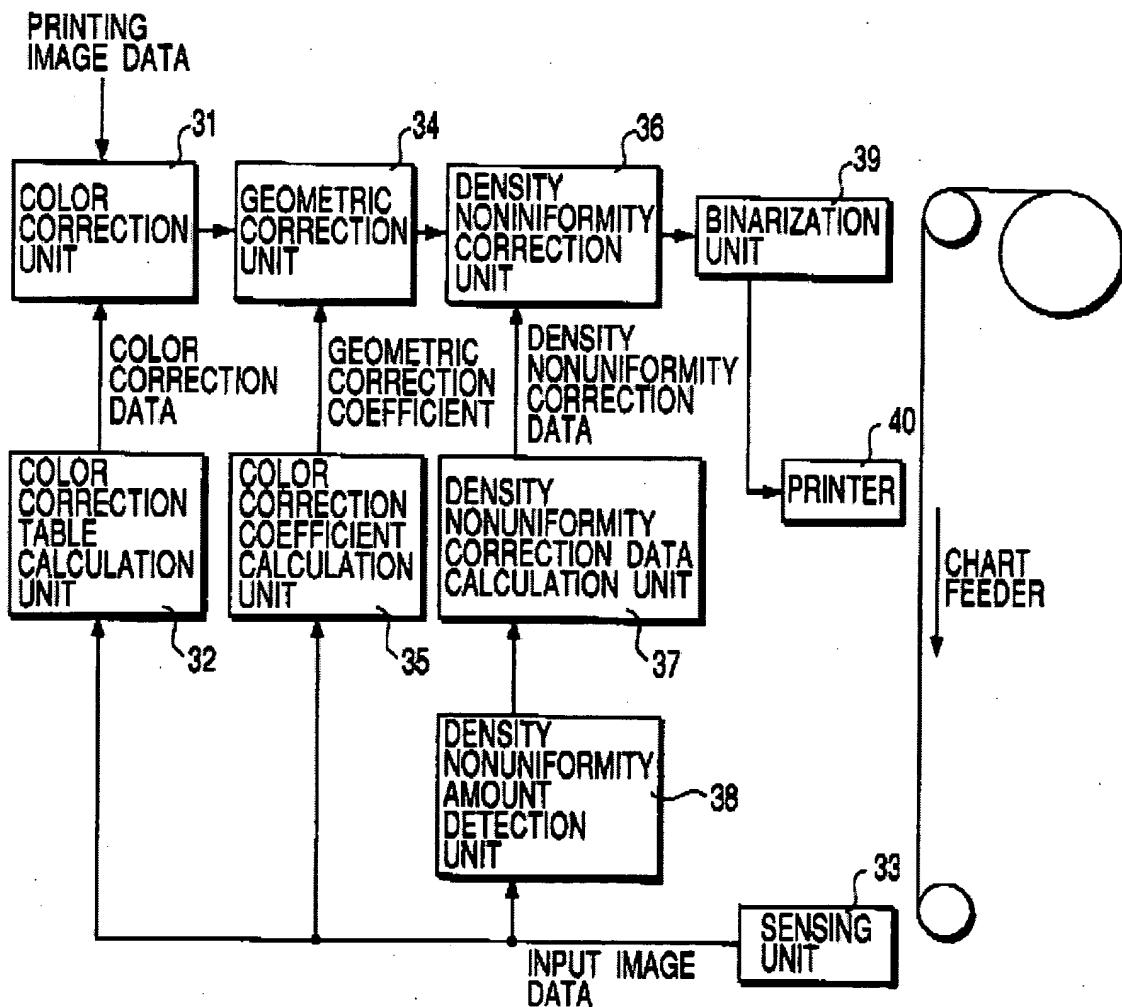


FIG. 6

Continuing with **claim 24**, Komiya et al. teach a test image storage means for storing the geometric property format, included in the system, as well as a storage unit for storing the calculated parameters (Komiya et al. Summary, Column 2, Lines 48-58).

g. As related to further dependent **claim 30**, Komiya et al. teach the limitations of **claim 24**, for the reasons above. Additionally, Komiya et al. teach at least one recording means, a printhead (Komiya et al. – Summary, Column 5, Line 22), for recording the marks on a recording medium having a recording face called a paper sheet (Komiya et al. - Description, Column 7, Line 24).

h. As related to further dependent **claim 33**, Komiya et al. teach the limitations of **claim 30**, for the reasons above. Additionally, Komiya et al. teach reconstructing the property format based upon the analysis results so as to perform the recording on the recording face of the recording medium by the recording means (Komiya et al. – Summary, Column 5, Lines 26-31 and Figure 4A, shown previously).

i. As related to further dependent **claim 34**, Komiya et al. teach the limitations of **claim 30**, for the reasons above. Additionally, Komiya et al. teach adjusting the recording means based upon the analysis results (Komiya et al. – Summary, Column 5, Lines 29-31, Figure 6, shown previously and Figure 7, shown below).

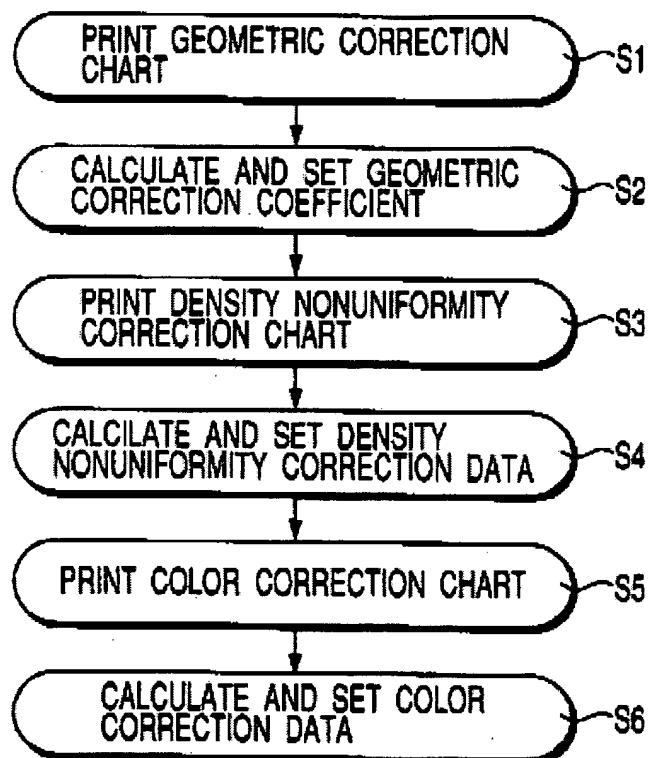


FIG. 7

j. As related to further dependent **claim 36**, Komiya et al. teach the limitations of **claim 30**, for the reasons above. Additionally, Komiya et al. teach a transporting means for transporting the recording medium relative to the printer and an image pickup means downstream of the recording means along the transporting direction, which is formed of a line sensor (Komiya et al. - Figure 6, shown previously and Figure 12B, shown below).

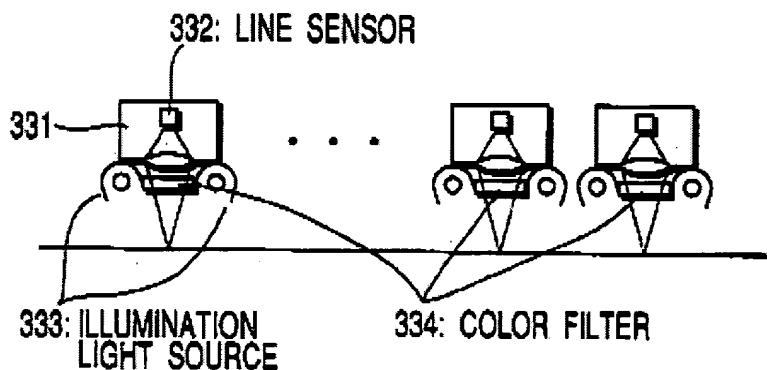


FIG. 12B

k. As related to further dependent **claim 46**, Komiya et al. teach the limitations of **claim 30**, for the reasons above. Additionally, Komiya et al. teach the use of the aforementioned analyzing system in an image printing apparatus, also referred to as a printer (Komiya et al. – Title & Abstract).

l. As related to dependent **claim 48**, Komiya et al. teach an analyzing method for analyzing the properties of a printer, a reader, and the recording medium, this system includes a image pickup step and an analyzing step (Komiya et al. – Abstract and Figure 6 shown previously). Included in the system Komiya et al. teach a test image storage step for storing the geometric property format, as well as a storage unit for storing the

calculated parameters (Komiya et al. - Summary, Column 2, Lines 48-58 and Figure 7 shown previously).

m. As related to further dependent **claim 51**, Komiya et al. teach the limitations of **claim 48**, for the reasons above. Additionally, Komiya et al. teach a step during which at least one recording means, a printhead (Komiya et al. – Summary, Column 5, Line 22), records the marks on a recording medium having a recording face called a paper sheet (Komiya et al. - Description, Column 7, Line 24).

n. As related to further dependent **claim 52**, Komiya et al. teach the limitations of **claim 51**, for the reasons above. Additionally, Komiya et al. teach adjusting the recording means based upon the analysis results (Komiya et al. – Summary, Column 5, Lines 29-31, Figures 6 & 7, shown previously).

o. As related to further dependent **claims 54 & 55**, Komiya et al. teach the limitations of **claim 48**, for the reasons above. Additionally, Komiya et al. teach the use of the aforementioned analyzing system in an image printing apparatus, also referred to as a printer having a plurality of nozzles (Komiya et al. – Title & Abstract) while relating the background of the invention to apply specifically to printing using inkjet print heads (Komiya et al. – Background, Column 1, Line 11).

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

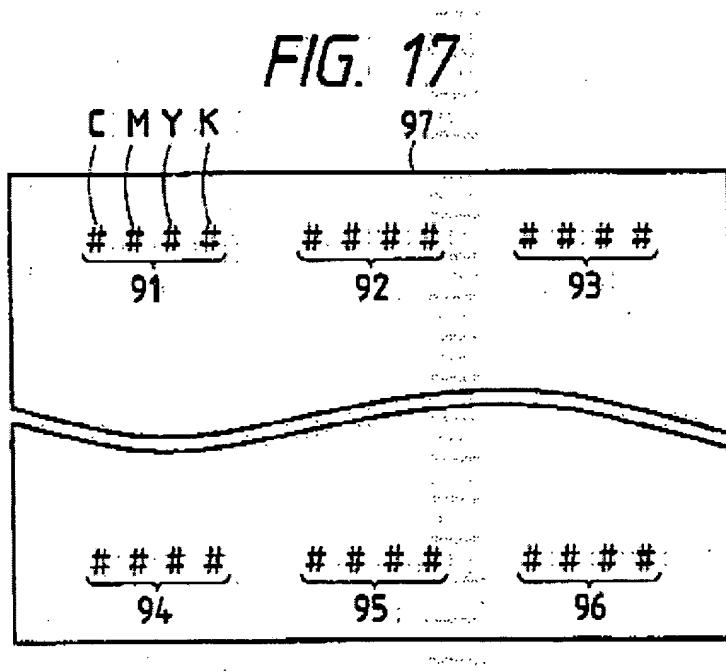
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

26. **Claims 5-6 & 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claim 1** above, and further in view of **Takeuchi et al.**, (US 5,715,498 A).

a. As related to dependent **claim 5**, Komiya et al. teach the limitations of **claim 1** for the reasons above. Komiya et al. *do not* specifically teach the plurality of marks arrayed at the same intervals along at least one direction. *However*, Takeuchi et al. teach a plurality of marks arrayed at the same intervals along one direction (Takeuchi et al. – Figure 17 shown below).



b. As related to dependent **claim 6**, Komiya et al. teach the limitations of **claim 1** for the reasons above. Komiya et al. *do not* specifically teach the same number of marks arrayed at the same intervals along at least one direction. *However*, Takeuchi et al. teach the same number of marks arrayed at the same intervals along one direction (Takeuchi et al. – Figure 17 shown previously).

c. As related to dependent **claim 20**, Komiya et al. teach the limitations of **claim 1** for the reasons above. Komiya et al. *do not* specifically teach the format designed to

prevent unintended interference in advance. **However**, Takeuchi et al. teach an image forming apparatus that releases an image, corrected in advance for the aberration in registration of various stations and a generation means for generating predetermined test chart data (Takeuchi et al. – Summary, Column 2, Lines 1-3 & 50-52).

Given the same field of endeavor, specifically an image forming apparatus with an image correction system, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the test chart requirements and design as taught by Komiya et al. with the test chart requirements and design including the plurality of marks or the same number of marks arranged in at least one direction and more arranged in one direction than the other as taught by Takeuchi et al., in an effort to enable more detailed correction of image distortion and provide an image with all aberrations corrected for (Takeuchi et al. – Description, Column 20, Lines 27-28 and Summary, Column 2, Lines 1-3).

27. **Claims 3, 8, 9 & 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claims 1 & 2** above, and further in view of **Shimada et al.**, (EP 0 988 990 A2).

a. As related to further dependent **claim 3**, Komiya et al. teach the limitations of **claim 2** for the reasons above. Komiya et al. **do not** teach the number of recording marks based on the precision of the recording positions of the marks and the required precision of the properties to be analyzed. **However**, Shimada et al. teach a number of recording marks of size 80 to 100um, arranged in groups taking up an area that is readable by the set precision of the device being analyzed (Shimada et al. – Paragraph 49, Lines 1-5 and Figures 2, 8 & 9, shown below).

EPO 068 500 A2

FIG. 2

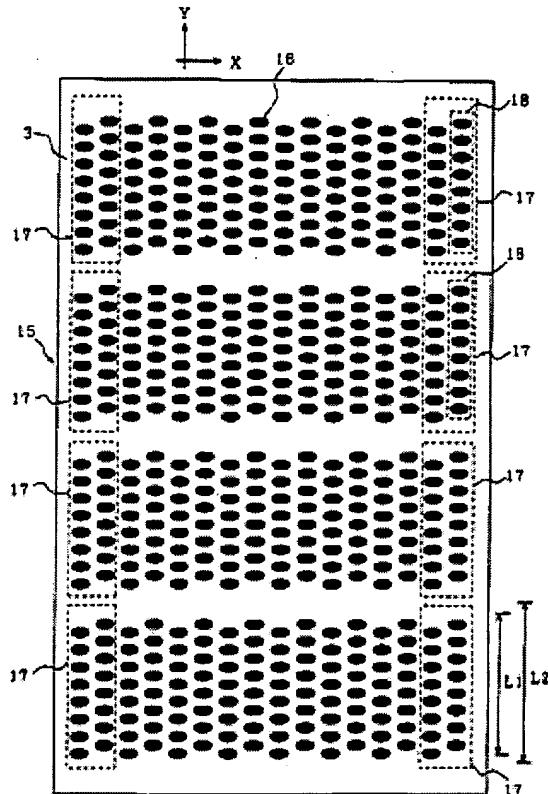


FIG. 8

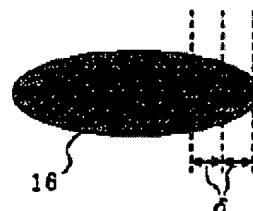
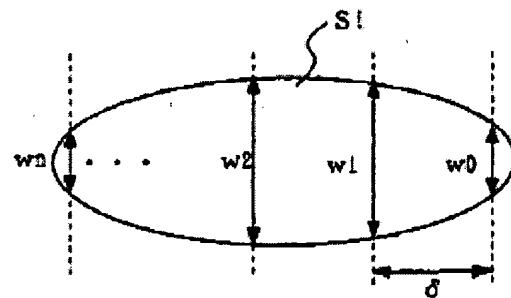


FIG. 9



b. As related to dependent **claim 8** & further dependent **claim 9**, Komiya et al. teach the limitations of **claim 1** for the reasons above. Additionally, Komiya et al. do teach a plurality of recording means recording a plurality of marks (Komiya et al. – Abstract, Lines 2-3). Komiya et al. **do not** teach the test chart comprising a plurality of chart components. **However**, Shimada et al. teach a test pattern with several ink drops in the test pattern are grouped together, and multiple groups are analyzed (Shimada et al. – Paragraph 15, Lines 30-33 and Figure 2, shown previously), as well as the plurality of marks forming separate groups by corresponding recording means (Shimada et al. – Paragraph 39, Lines 9-11 and Figure 2, shown previously).

c. As related to dependent **claim 15**, Komiya et al. teach the limitations of **claim 1** for the reasons above. Komiya et al. **do not** specifically teach the plurality of marks arrange with a predetermined average mark density with space between the marks to provide analysis without interference. **However**, Shimada et al. teach a test pattern with adequate space between marks to avoid such interference during analysis (Shimada et al. – Figure 2, shown previously).

Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the precision requirements and the test chart requirements as taught by Komiya et al. with the use of a specific number of marks, specifically located as required for proper precision and the test chart comprising multiple groups as taught by Shimada et al., in an effort to judge any failure or aberration on a group or component basis (Shimada et al. – Abstract, Lines 11-12).

28. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) and **Shimada et al.**, (EP 0 988 990 A2) as applied to **claim 3** above, and further in view of **Takeuchi et al.**, (US 5,715,498 A).

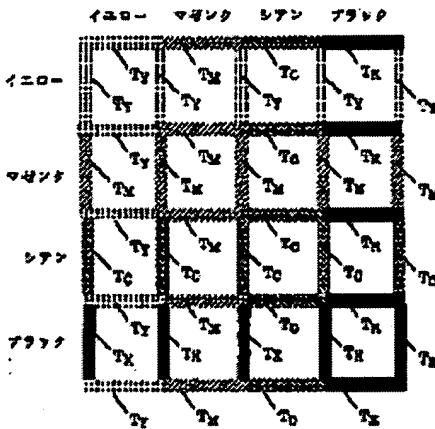
The previous combination of Komiya et al. and Shimada et al. remains as applied above, but **does not** teach more marks arrayed in the direction along which recording is made. **However**, Takeuchi et al. teach three registration marks in the main scanning direction and two in the sub scanning direction to enable more detailed correction of the image distortion (Takeuchi et al. – Description, Column 20, Lines 21 and 26-28). Given the same field of endeavor, specifically an image forming apparatus with an defect detection

system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine test chart with the marks applied as taught by the combination of Komiya et al. and Shimada et al. with the test chart with more marks arranged in one direction in an effort to enable more detailed correction of the image distortion (Takeuchi et al. – Description, Column 20, Lines 26-28).

29. **Claims 10-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) and **Shimada et al.**, (EP 0 988 990 A2) as applied to **claim 8** above, and further in view of **Sasahara et al.**, (JP 06-261156).

a. As related to dependent **claim 10**, the previous combination of Komiya et al. and Shimada et al. remains as applied above, but *does not* specifically teach the marks recorded in a different form corresponding to the chart component. **However**, Sasahara et al. teach groups of marks corresponding to chart components recorded in different form (Sasahara et al. – Drawing 6, shown below).

Drawing 6 [図5]



b. As related to dependent **claim 11** & further dependent **claims 12 & 13**, the previous combination of Komiya et al. and Shimada et al. remains as applied above, additionally, Komiya et al. teach a partially overlapping region (Komiya et al. – Abstract, Line 7), but *do not* specifically teach forming at least one overlapped region, nor does it teach at least one overlapped region formed by marks in the same color or at least one overlapped region formed by marks in different colors. **However**, Sasahara et al. teach a test pattern with overlapping regions and at least some of the overlapping regions formed in the same color as well as some of the overlapping regions formed in different colors (Sasahara et al. - Paragraph 45 and Drawing 6, shown previously).

Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the precision requirements and the test chart requirements as taught by the combination of Komiya et al. and Shimada et al., with the test chart requirements consisting of overlapping regions

with some formed in the same color as well as some formed in different colors as taught by Sasahara et al., in an effort to properly evaluate the specific device being analyzed by providing the proper correction coefficient (Komiya et al. – Abstract, Lines 10-12).

30. **Claims 14, 16 & 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) and **Shimada et al.**, (EP 0 988 990 A2) as applied to **claim 8** above, and further in view of **Miyake et al.**, (EP 0 918 432 A2).

a. As related to dependent **claim 14**, the previous combination of Komiya et al. and Shimada et al. remains as applied above, but *does not* specifically teach the same number of marks between chart components, recorded along a predetermined direction such that unintended deviation can cancel each other out. **However**, Miyake et al. teach the plurality of marks arranged in a predetermined pattern with uniformity along the direction orthogonal to a predetermined direction thereby canceling out any unintended deviations (Miyake et al. – Abstract, Line 1 and Figures 5 & 8, shown below).

FIG. 5

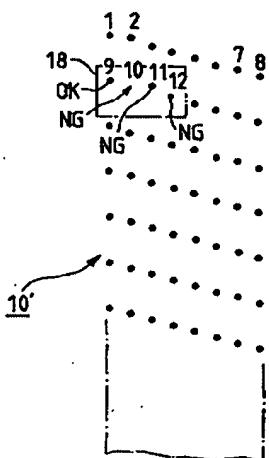
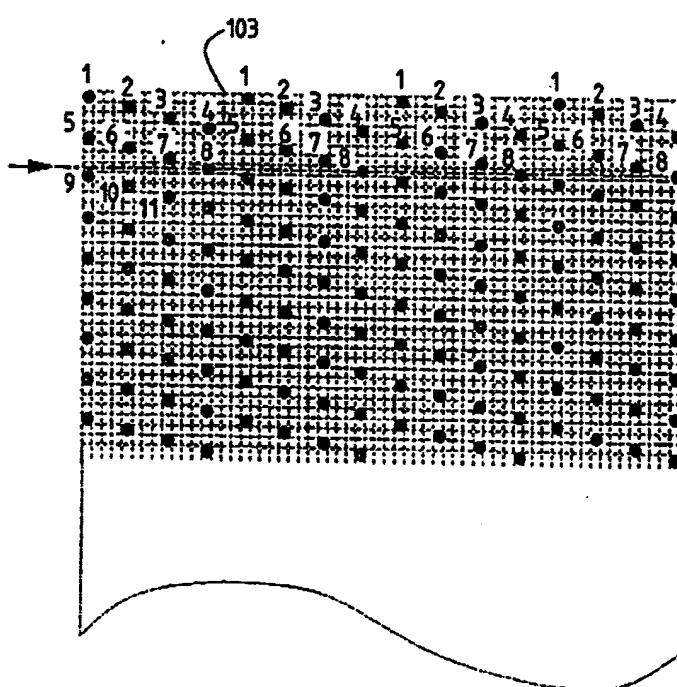


FIG. 8



b. As related to dependent **claims 16 & 17**, the previous combination of Komiya et al. and Shimada et al. remains as applied to **claim 15** above, but **does not** specifically teach the predetermined mark density of one mark per area where four marks can be recorded up to one mark per area where fifty marks can be recorded with additional mark densities of one mark per area where ten marks can be recorded up to one mark per area where twenty marks can be recorded. **However**, Miyake et al. teach a predetermined mark density in a predetermined pattern that encompasses all of the above mentioned densities from one mark per area where four marks can be recorded up to one mark per area where fifty marks can be recorded (Miyake et al. – Figures 5 & 8, shown previously and Figures 7 & 9 shown below).

FIG. 7

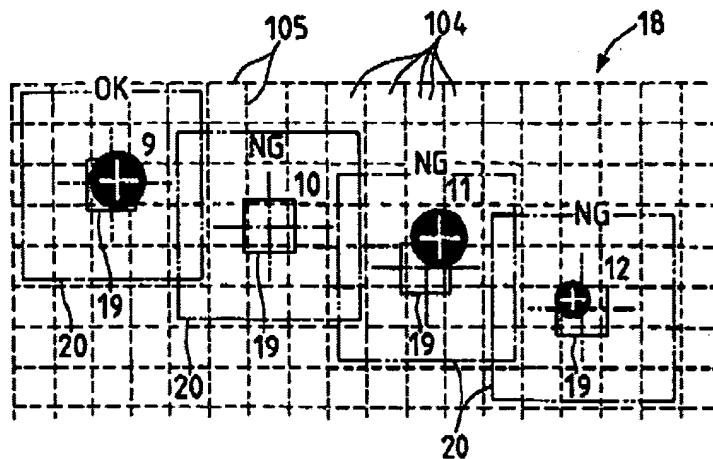
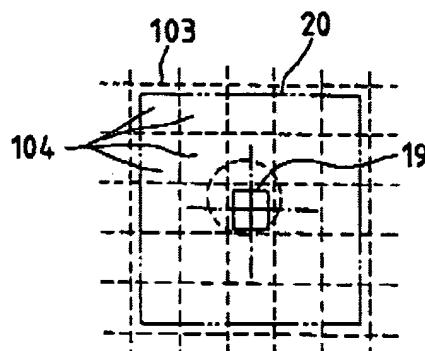


FIG. 9



Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the test chart requirements as taught by the combination of Komiya et al. and Shimada et al., with the test chart requirements consisting of the plurality of marks arranged in a predetermined pattern to allow the canceling out of any unintended deviations as taught by Miyake et

al., in an effort to obtain a non-defective image from the image forming apparatus (Miyake et al. – Abstract, Lines 4-5).

31. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claim 1** above, and further in view of **Sasahara et al.**, (JP 06-261156).

Komiya et al. teach the limitations of **claim 1** for the reasons above. Additionally Komiya et al. teach calculating and setting various correction data for the printer in advance based on multiple inputs (Komiya et al. – Figures 4A & 7, shown below), and avoiding interference by printing various regions based on which property is to be analyzed (Komiya et al. – Figure 15, shown below).

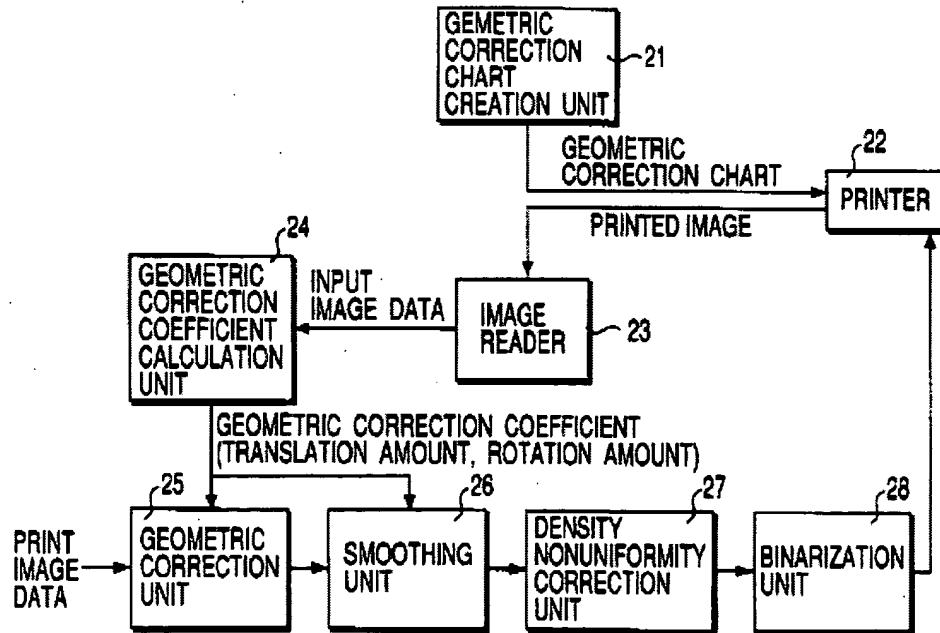


FIG. 4A

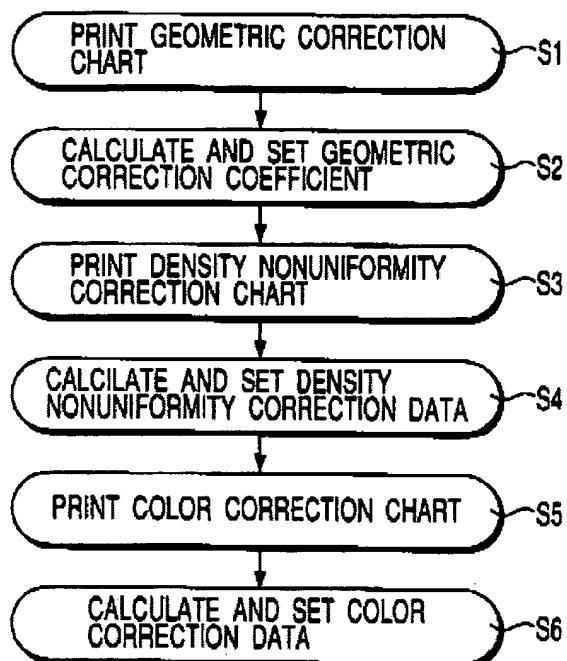


FIG. 7

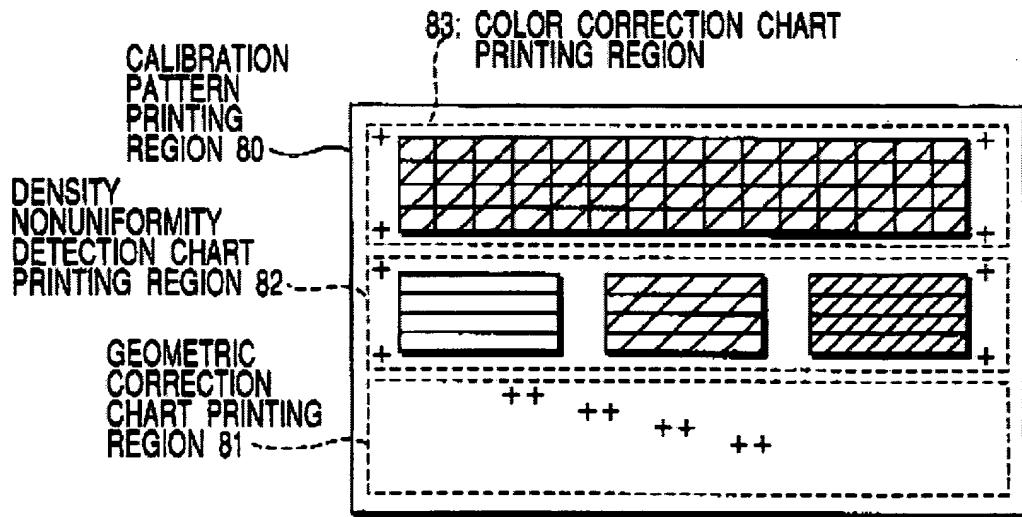


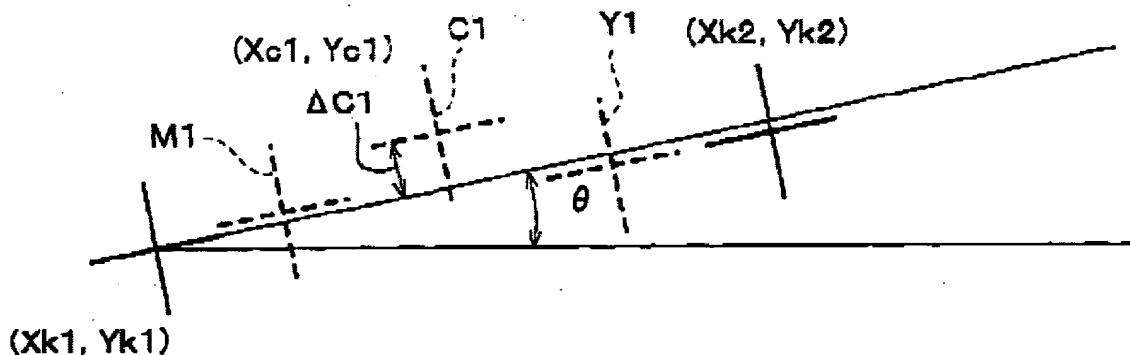
FIG. 15

Komiya et al. **do not** specifically teach the plurality of marks recorded based upon at least two kinds of the geometric property formats in advance. **However**, Sasahara et al. teach a plurality of marks recorded and the measurement and analysis performed beforehand (Sasahara et al. – Description, Paragraph 47, and Drawing 6 shown previously). Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the calculating and setting of various correction data as taught by Komiya et al., with the measurement and analysis performed in advance as taught by Sasahara et al. in an effort to properly evaluate the specific device being analyzed by providing the proper corrections at the appropriate time (Komiya et al. – Abstract, Lines 10-12).

32. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claim 21** above, and further in view of **Taka et al.**, (US 7,106,942 B2).

Komiya et al. teach the limitations of **claim 21** for the reasons above. Komiya et al. *do not* specifically teach at least three reference marks provided not arrayed on a single line. *However*, Taka et al. teach reference marks in an auxiliary pattern, specifically at least three arranged not on a single line (Taka et al. – Description, Column 11, Lines 50 & 57 and Figure 5 shown below).

FIG. 5



Given the same field of endeavor, specifically an image forming apparatus with a defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the reference marks as taught by Komiya et al., with the arrangement of at least three that did not allow them to fall in a single line as taught by Sasahara et al. in an effort to eliminate the displacements of the recording device(s) (Taka et al. – Description, Column 11, Lines 21-24).

33. **Claim 23** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claim 1** above, and further in view of **Miyake et al.**, (EP 0 918 432 A2).

Komiya et al. teach the limitations of **claim 1** for the reasons above. Komiya et al. *do not* specifically teach a bar formed of a plurality of dots in the shape of a belt. **However**, Miyake et al. teach a bar formed of a plurality of dots in the shape of a belt (Miyake et al. – Description, Column 6, Lines 51-53 and Figures 4 & 5 shown below).

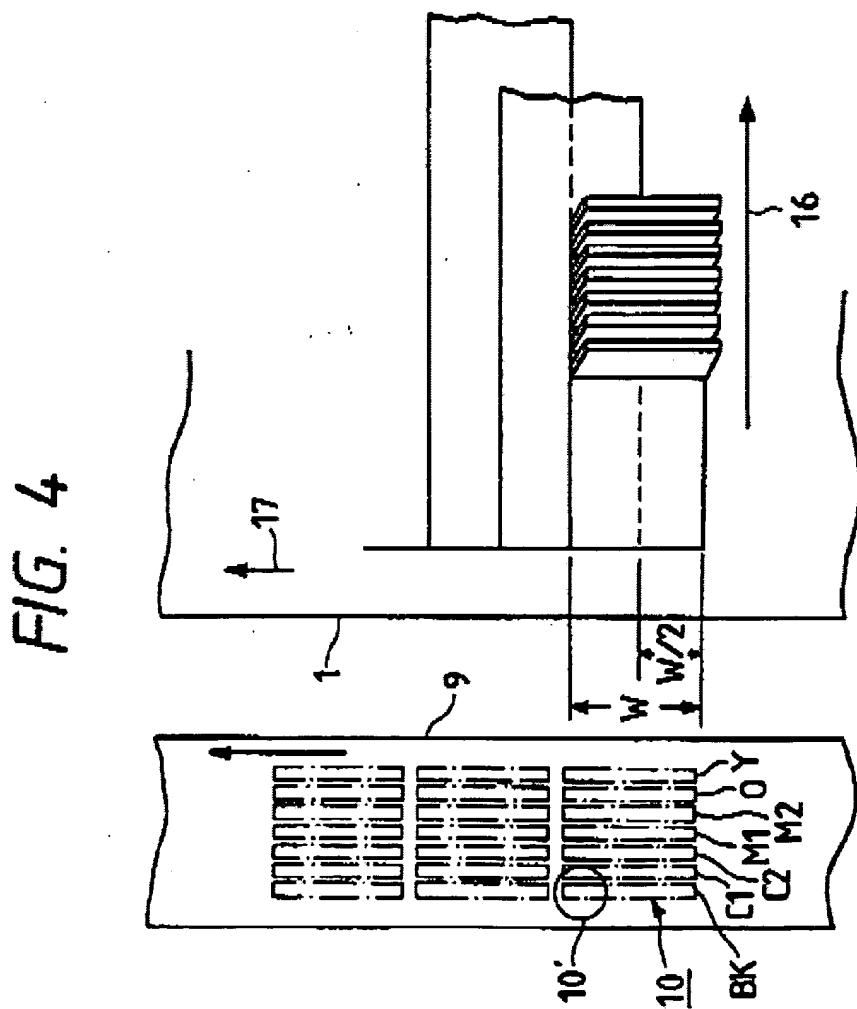
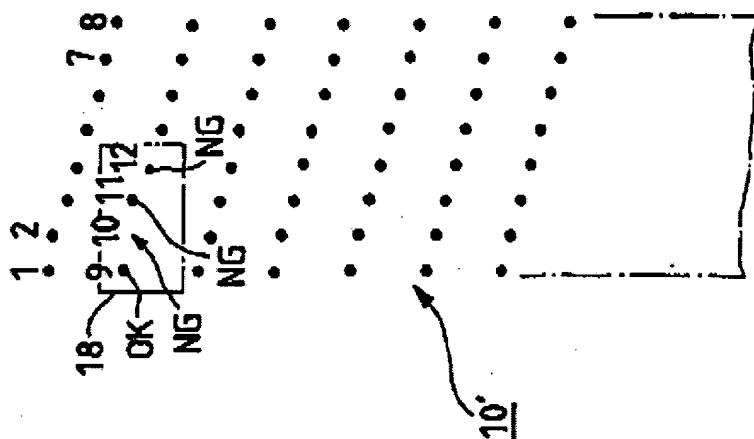


FIG. 5



Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the pattern of dots formed to detect substandard printing as taught by Komiya et al., with the arrangement of a plurality of dots in the shape of a bar line as taught by Miyake et al. in an effort to detect an abnormal recording device (Miyake et al. – Abstract, Lines 3-4).

34. **Claims 25, 26, 28, 29 & 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claim 24 & claim 30** above, and further in view of **Taka et al.**, (US 7,106,942 B2).

a. As related to dependent **claim 25**, Komiya et al. teach the limitations of **claim 24**, for the reasons above. Komiya et al. *do not* specifically teach calculating the center position. **However**, Taka et al. teach measuring and calculating the center position of each mark of the patterns and measuring the displacements of the patterns in the direction off the referential straight line, and compensates for the displacements thereby minimizing the differences (Taka et al. – Abstract and Figure 5 & 6(b) shown below).

FIG. 5

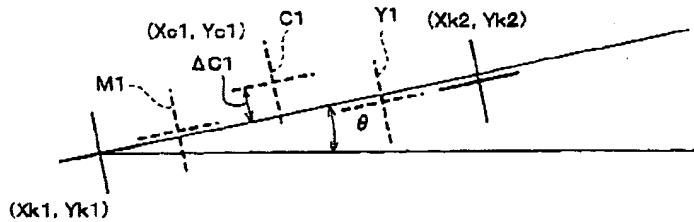
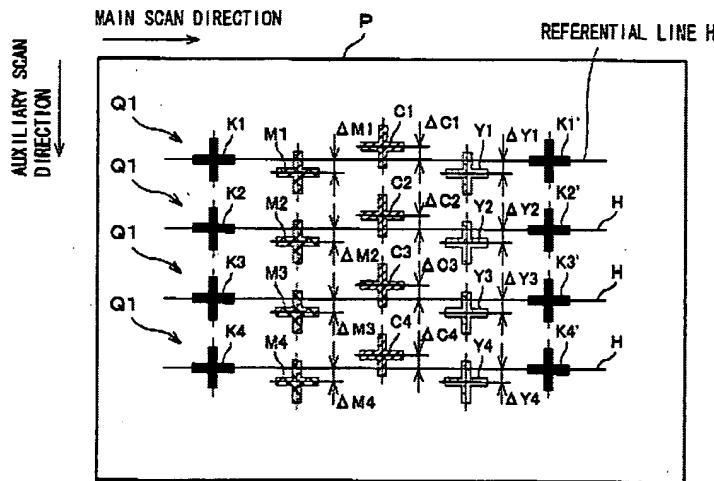
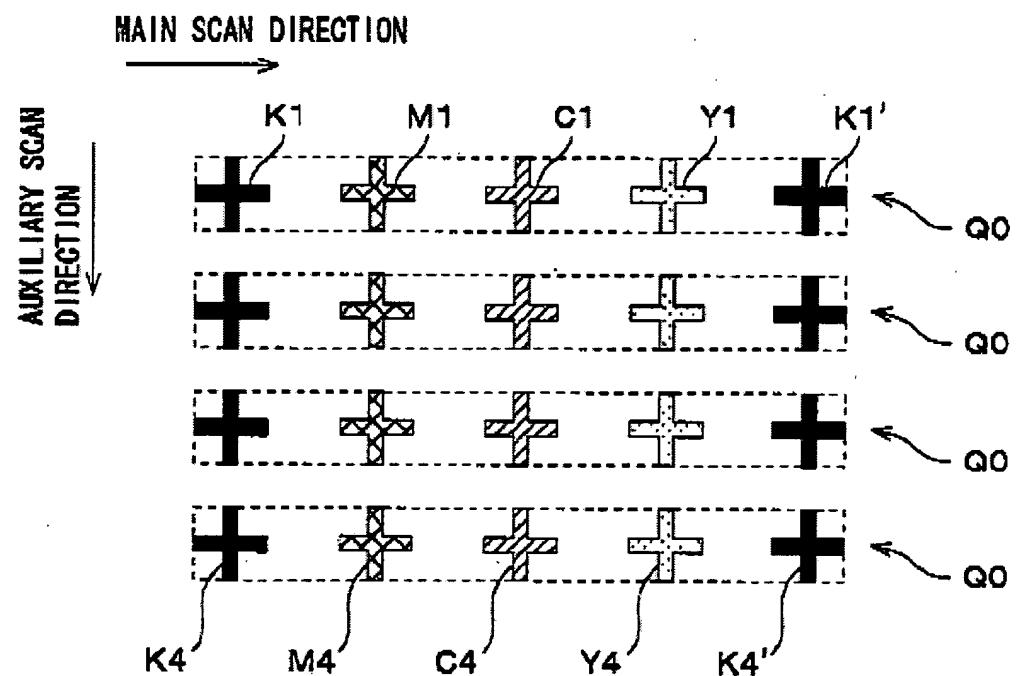


FIG. 6 (b)



b. As related to dependent claims 26 & 29, Komiya et al. teach the limitations of claim 24, for the reasons above. Komiya et al. *do not* specifically teach dividing the test chart into a plurality of chart components. *However*, Taka et al. teach dividing the test chart into a plurality of chart components to perform a relative comparison between the properties of them (Taka et al. – Description, Column 12, Line 12, Figure 6(a) shown below and Figure 6(b) shown previously).

FIG. 6 (a)



c. As related to dependent **claim 28**, Komiya et al. and Taka et al. teach the limitations of **claim 26**, for the reasons above. Additionally, Komiya et al. teach the correction chart being designed based on the properties, which are to be analyzed (Komiya et al. – Figure 8B, shown below and Figure 15, shown previously).

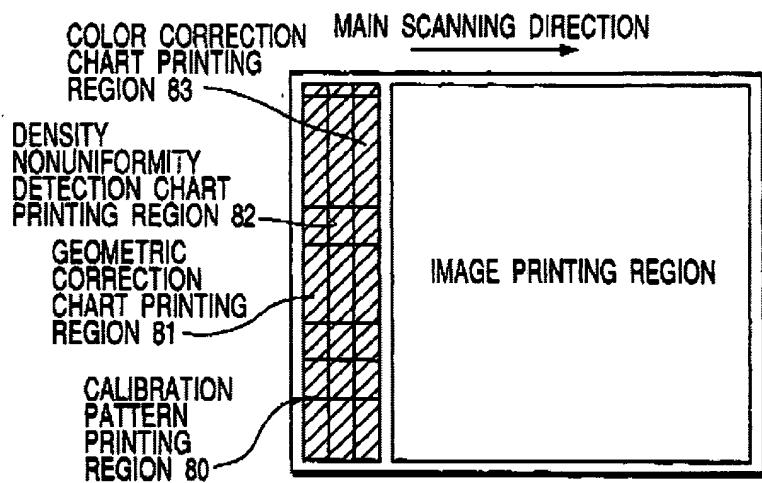
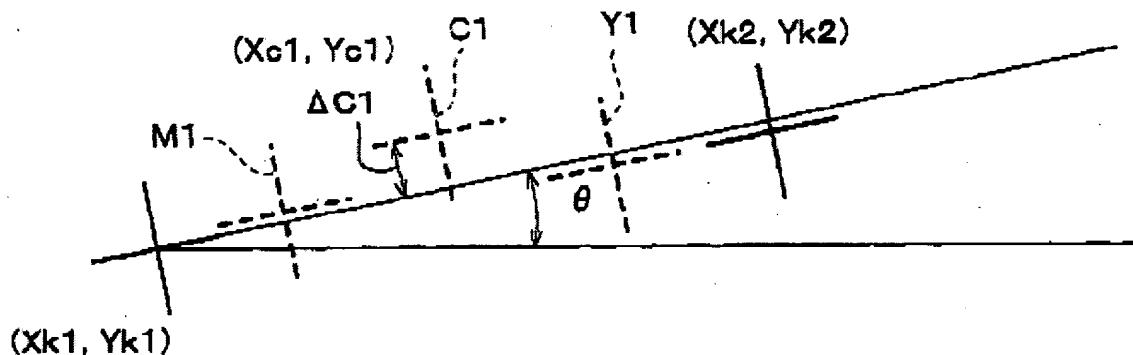


FIG. 8B

d. As related to dependent **claim 31**, Komiya et al. teach the limitations of **claim 30**, for the reasons above. Komiya et al. **do not** teach using a plurality of image forming means and dividing the marks into chart components and determining at least one reference mark and vector. **However**, Taka et al. teach using a plurality of image forming means and dividing the marks into chart components corresponding to the recording means as well as determining at least one reference mark and vector for each component (Taka et al. – Summary, Column 2, Lines 48-49, Figure 5, shown below and Figures 6(a) & 6(b), shown previously).

FIG. 5



Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the test chart and analyzing system including the specific units as taught by Komiya et al., with the analyzing system that calculates and uses the center position of the plurality of marks as well as dividing the test chart as taught by Taka et al. in an effort to minimize the differences and displacements and better perform analysis (Taka et al. – Abstract and Description, Column 11; Lines 18 & 22-24).

35. **Claim 27** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) and **Taka et al.**, (US 7,106,942 B2) as applied to **claim 26** above, and further in view of **Shimada et al.**, (EP 0 988 990 A2).

The previous combination of Komiya et al. and Taka et al. remains as applied above, but **does not** teach the number of recording marks based on the precision of the recording positions of the marks and the required precision of the properties to be analyzed.

However, Shimada et al. teach a number of recording marks of size 80 to 100um, arranged in groups taking up an area that is readable by the set precision of the device being analyzed (Shimada et al. – Paragraph 49, Lines 1-5 and Figures 2, 8 & 9, shown below).

EP0028500A2

FIG. 2

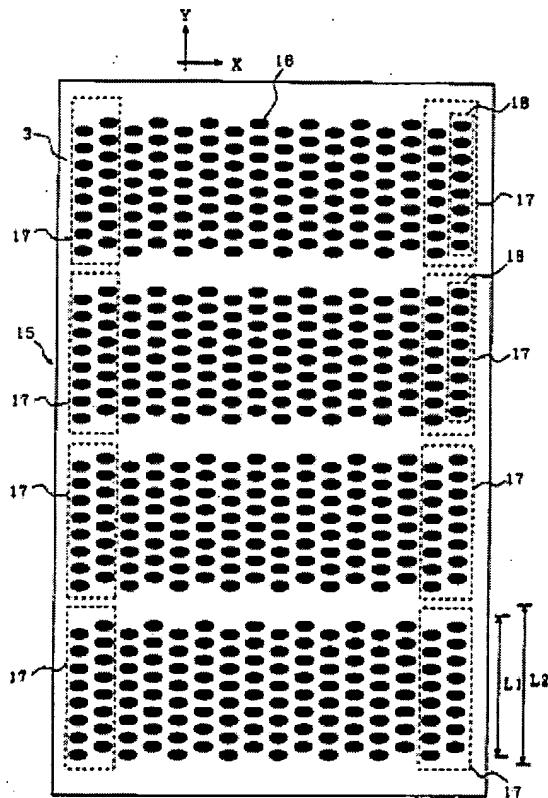


FIG. 8

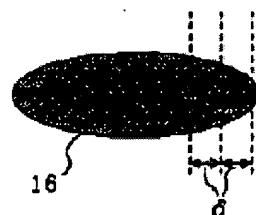
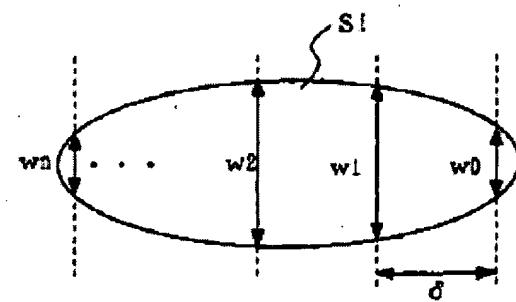


FIG. 9



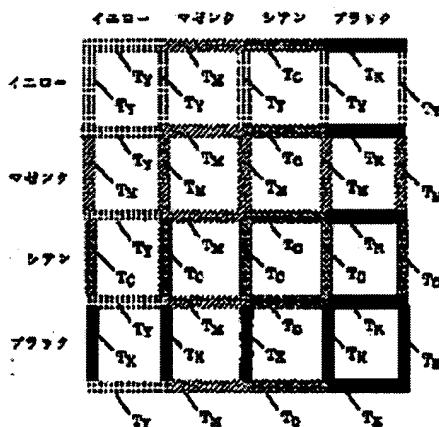
Given the same field of endeavor, specifically an image forming apparatus with a defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the precision requirements and the test chart requirements as taught by Komiya et al. and Taka et al. with the use of a specific number of marks, specifically located as required for proper precision and the test chart comprising multiple groups as taught by Shimada et al., in an

effort to judge any failure or aberration on a group or component basis (Shimada et al. – Abstract, Lines 11-12).

36. **Claim 32** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) and **Taka et al.**, (US 7,106,942 B2) as applied to **claim 31** above, and further in view of **Sasahara et al.**, (JP 06-261156 A2).

The previous combination of Komiya et al. and Taka et al. remains as applied above, but **does not** specifically teach the marks recorded in a different form corresponding to the chart component. **However**, Sasahara et al. teach groups of marks corresponding to chart components recorded in different form (Sasahara et al. – Drawing 6, shown below).

Drawing 6 [図5]



Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the precision requirements and the test chart requirements as taught by the combination of Komiya et al. and Taka et al., with the test chart requirements consisting of groups of marks

corresponding to chart components recorded in different form as taught by Sasahara et al., in an effort to properly evaluate the specific device being analyzed by providing the proper correction coefficient (Komiya et al. – Abstract, Lines 10-12).

37. **Claims 35 & 53** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claim 34 & 52** above, and further in view of **Hayashi et al.**, (EP 0 982 146 A2).

a. As related to dependent **claim 35**, Komiya et al. teach the limitations of **claim 34**, for the reasons above. Additionally, Komiya et al. teach correction adjustments in the specific order of geometric, density, and color (Komiya et al. – Description, Column 8, Lines 44 – 49 and Figure 7, shown below). Komiya et al. *do not* specifically teach adjustments made ending in timing adjustment. **However**, Hayashi et al. teach a timing correction section (Hayashi et al. – Abstract), as a part of a test chart analyzing system for making adjustments (Hayashi et al. – Figure 1, shown below), showing correction of timing to be the final step in the adjustment routine (Hayashi et al. – Figure 18, shown below).

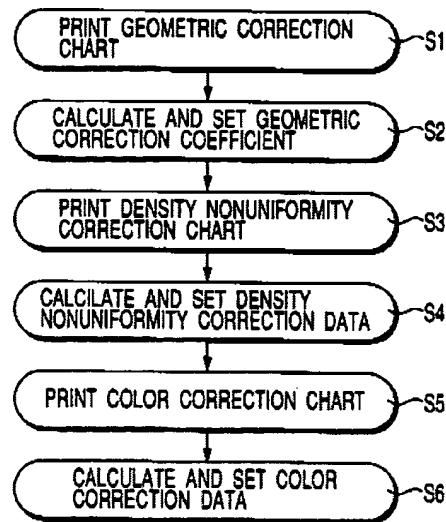


FIG. 7

FIG. 1

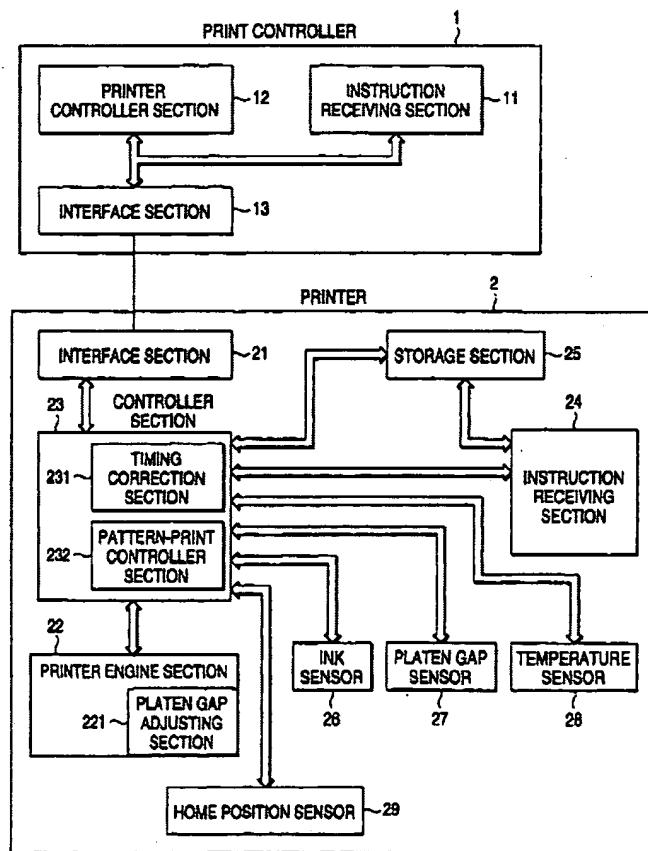
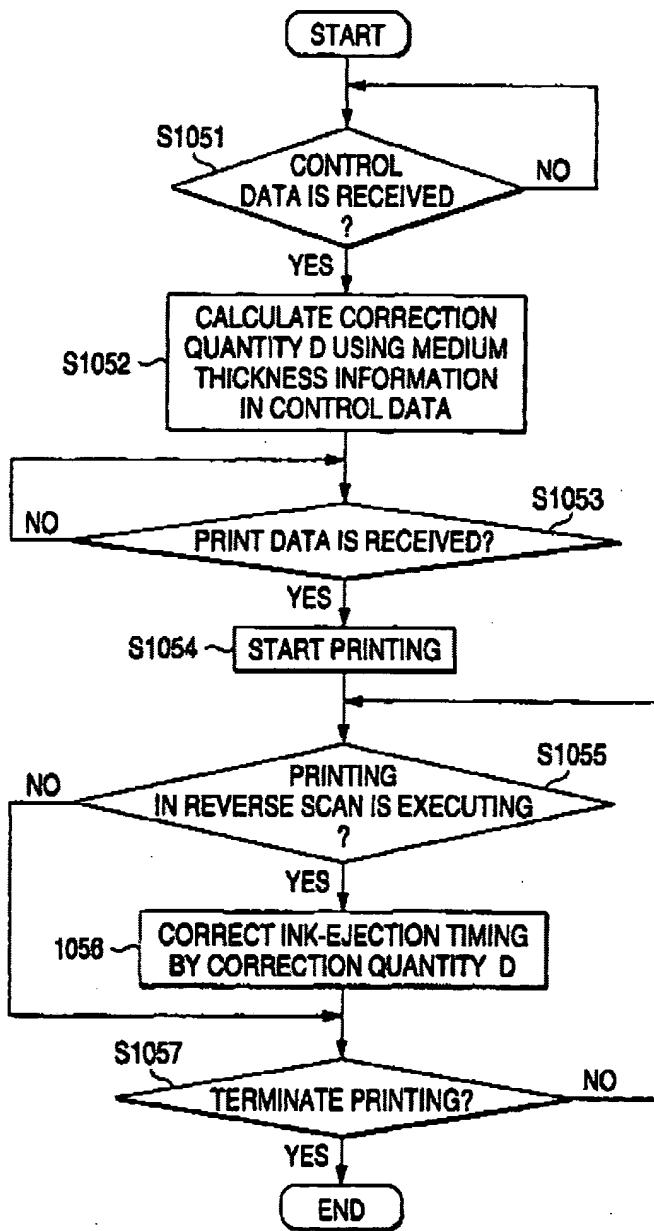


FIG. 18



b. As related to dependent **claim 53**, Komiya et al. teach the limitations of **claim 52**, for the reasons above. Additionally, Komiya et al. teach correction adjustments in the specific order of geometric, density, and color (Komiya et al. – Description; Column 8,

Lines 44 – 49 and Figure 7, shown above). Komiya et al. **do not** specifically teach adjustments made ending in timing adjustment. **However**, Hayashi et al. teach a timing correction section (Hayashi et al. – Abstract), as a part of a test chart analyzing system for making adjustments (Hayashi et al. – Figure 1, shown above), showing correction of timing to be the final step in the adjustment routine (Hayashi et al. – Figure 18, shown above).

Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the test chart requirements and the steps of the analyzing system as taught by Komiya et al., with the test chart requirements and steps of analyzing system consisting of a timing correction adjustment made as the final step of the routine as taught by Hayashi et al., in an effort to obviate printing-position offset (Hayashi et al. – Summary, Paragraph 11, Line 15).

38. **Claims 37 – 39 & 47** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claim 30** above, and further in view of **Shimada et al.**, (EP 0 988 990 A2).

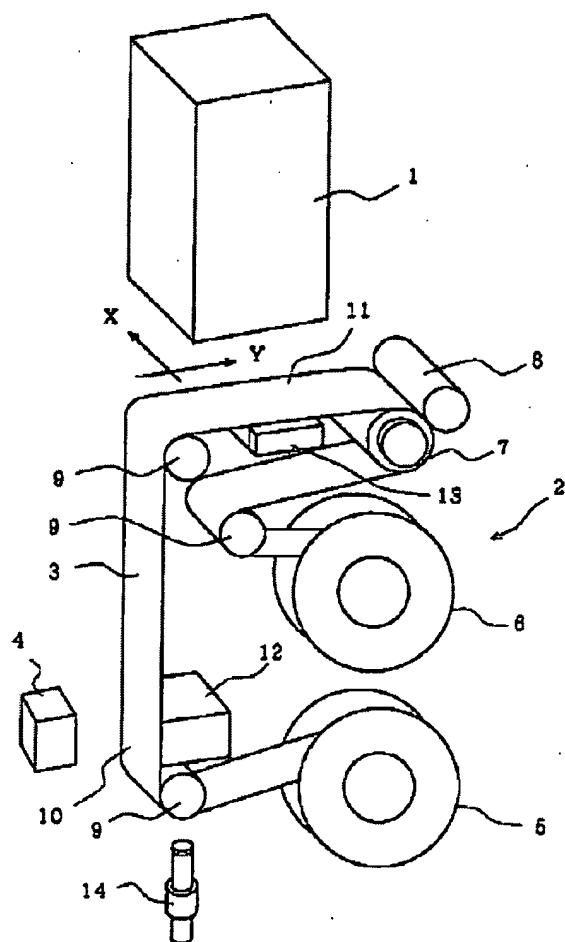
a. As related to dependent **claim 37** and further dependent **claim 47**, Komiya et al. teach the limitations of **claim 30**, for the reasons above. While Komiya et al. teach a plurality of print heads, each having a plurality of nozzles thereby teaching a printing apparatus employing the analyzing system (Komiya et al. – Title & Abstract), they **do not** specifically teach an ink-jet head and discharging ink on the recording medium.

However, Shimada et al. teach an ink drop test pattern printed on a test recording medium by a printing head (Shimada et al. – Description, Paragraph 15, Lines 31-33).

b. As related to dependent **claim 38**, Komiya et al. teach the limitations of **claim 30**, for the reasons above. Komiya et al. *do not* specifically teach an image pickup means with a higher image pickup resolution than the recording resolution of the recording means. **However**, Shimada et al. teach a recording means with a recording resolution less than the resolution of the image pickup means (Shimada et al. – Description, Paragraph 47, Line 26, Paragraph 49, Line 36, and Figures 8 & 9, shown previously).

c. As related to dependent **claim 39**, Komiya et al. teach the limitations of **claim 30**, for the reasons above. Komiya et al. *do not* specifically teach the analyzing means formed as a separate unit from the image pickup means and the recording means. *However*, Shimada et al. teach the analyzing means being a separate publicly known device connected to the image pickup means by a cable, and the image pickup means formed together with a recording means (Shimada et al. – Description, Paragraph 46, Lines 14-17, and Figure 1, shown below).

F I G . 1

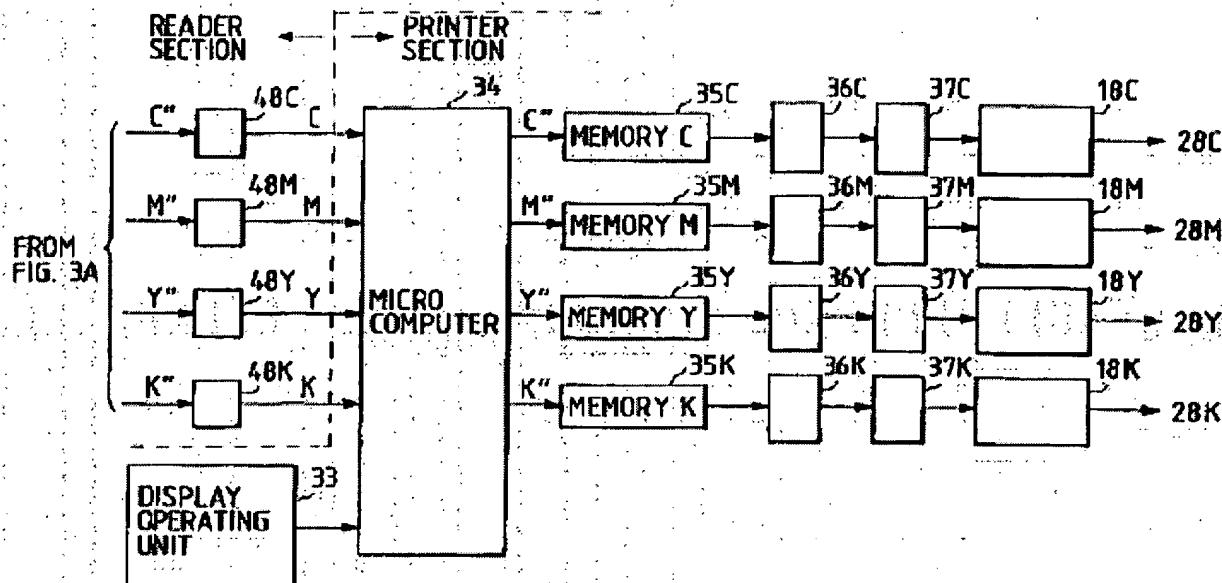


Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the specifics of the recording means and the image pickup means to include the location and the effective use of such means as taught by Komiya et al. with the use of a specific ink-jet head and desired precision of the recording means and imaging means as well as the use of a separate analyzing means as taught by Shimada et al., in an effort to judge any failure or aberration on a group or component basis (Shimada et al. – Abstract, Lines 11-12), as well as to do so with publicly known devices so as to avoid the need of illustrative description (Shimada et al. – Description, Paragraph 46, Lines 14-17).

39. **Claim 40** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claim 30** above, and further in view of **Takeuchi et al.**, (US 5,715,498 A).

Komiya et al. teach the limitations of **claim 30** for the reasons above. Komiya et al. *do not* specifically teach the format storage means integrally held by the recording means. *However*, Takeuchi et al. teach storing means for storing image data (Takeuchi et al. – Abstract), and having that memory integrally a part of the recording means (Takeuchi et al. – Figure 3B shown below).

FIG. 3B



Given the same field of endeavor, specifically an image forming apparatus with an image correction system, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the test chart and analyzing system including the storage unit for storing parameters as taught by Komiya et al. with the use of a storage integrally a part of the recording means as taught by Takeuchi et al., in an effort to reduce the amount of external devices needed while storing the image data required (Takeuchi et al. – Description, Column 2, Lines 53-54).

40. **Claims 41, 43, 44** are rejected under 35 U.S.C. 103(a) as being unpatentable over Komiya et al., (US 6,287,027 B1) as applied to **claim 24** above, and further in view of Takeuchi et al., (US 5,715,498 A).

a. As related to dependent **claim 41**, Komiya et al. teach the limitations of **claim 24** for the reasons above. Komiya et al. *do not* teach a transporting belt being used as another recording means for the test chart. **However**, Takeuchi et al. teach forming a

plurality of registration marks to depict a test chart on the transfer belt in predetermined positions (Takeuchi et al. – Description, Column 11, Lines 27 & 38-39).

b. As related to dependent **claim 43**, Komiya et al. teach the limitations of **claim 24** for the reasons above. Komiya et al. *do not* specifically teach the geometric property format designed giving consideration to the image size handled by the system. **However**, Takeuchi et al. teach geometric property formats that are designed with specifics based on size of the image, the precision of the devices, and the resolving power of the systems (Takeuchi et al. – Description, Column 9, Lines 14-16, 19-21, and Column 11, Lines 8-12, 21-23).

c. As related to dependent **claim 44**, Komiya et al. teach the limitations of **claim 24** for the reasons above. Komiya et al. *do not* specifically teach the recording the plurality of marks with higher recording precision than the required analysis precision. **However**, Takeuchi et al. teach the required analysis precision to be 400-600 dots/inch (Takeuchi et al. – Description, Column 9, Line 16) and the recording precision to be 600 dots/inch (Takeuchi et al. – Description, Column 11, Lines 60-61).

Given the same field of endeavor, specifically an image forming apparatus with an image correction system, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the test chart and analyzing system including the plurality of marks and the design as taught by Komiya et al. with the use of the transporting belt as a recording medium for the test chart as well as the format design as taught by Takeuchi et al., in an effort to reduce the amount of materials needed by allowing reuse of the transfer belt by the registration marking means (Takeuchi et al. – Description, Column 10, Lines 62-63 and Column 11, Line 4) and produce the proper

image size and precision relative to the analyzing system's capabilities (Takeuchi et al. – Description, Column 9, Lines 14-16, 19-21, and Column 11, Lines 8-12).

41. **Claim 42** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) and **Takeuchi et al.**, (US 5,715,498 A) as applied to **claim 41** above, and further in view of **Johnson**, (US 6,982,812 B2).

The previous combination of Komiya et al. and Takeuchi et al. remains as applied above, but **does not** specifically teach a suctioning means used to fix recording medium on to the belt face by air suctioning through a plurality of openings, and further **does not** teach a plurality of openings formed on the belt face serving as the plurality of marks. **However**, given what is commonly known in the art of printing apparatuses, that being the use of vacuum suction to fix printing media to a transport belt, it would have been obvious to one of ordinary skill in the art at the time the invention was made to realize that the common method of affixing printing media to a transport belt via suction, would be a viable and probable method used by Komiya et al. without departing from the spirit or scope of the general inventive concept as defined (Komiya et al. - Description, Column 12, Lines 5-8).

Additionally, Johnson **does** teach an analyzing system that incorporates off-media calibration performed to obtain off-media measured values without placing colorant on print media (Johnson – Abstract), and further mentions various methods of off-media calibration including those that have no impact on the customer (Johnson – Summary, Column 2, Lines 19-20, 25-27, and 46-48). Given the same field of endeavor, specifically an image forming apparatus with an image correction system, it is apparent that one of ordinary skill in the art at the time the invention was made would have been

motivated to combine the use of a transport belt as the recording surface as taught by the combination above along with the traditional use of vacuum suction to affix printing media to a transport belt with the use of the openings formed for suction to provide an optional off-media test chart for use in off-media calibration as taught by Johnson, in an effort to reduce the amount of materials needed to none (Johnson – Summary, Column 2, Line 48), by allowing reuse of the transfer belt by the registration marking means (Takeuchi et al. – Description, Column 10, Lines 62-63 and Column 11, Line 4).

42. **Claim 45** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) and **Takeuchi et al.**, (US 5,715,498 A) as applied to **claim 44** above, and further in view of **Taka et al.**, (US 7,106,942 B2).

The previous combination of Komiya et al. and Takeuchi et al. remains as applied above, but **does not** specifically teach a the image pickup means being analyzed before the properties of the recording means. **However**, Taka et al. teach the image pickup means as the initial step of the analyzing system and the recording means as a later step of the

analyzing system (Taka et al. – Figures 2 & 3, shown below).

FIG. 2

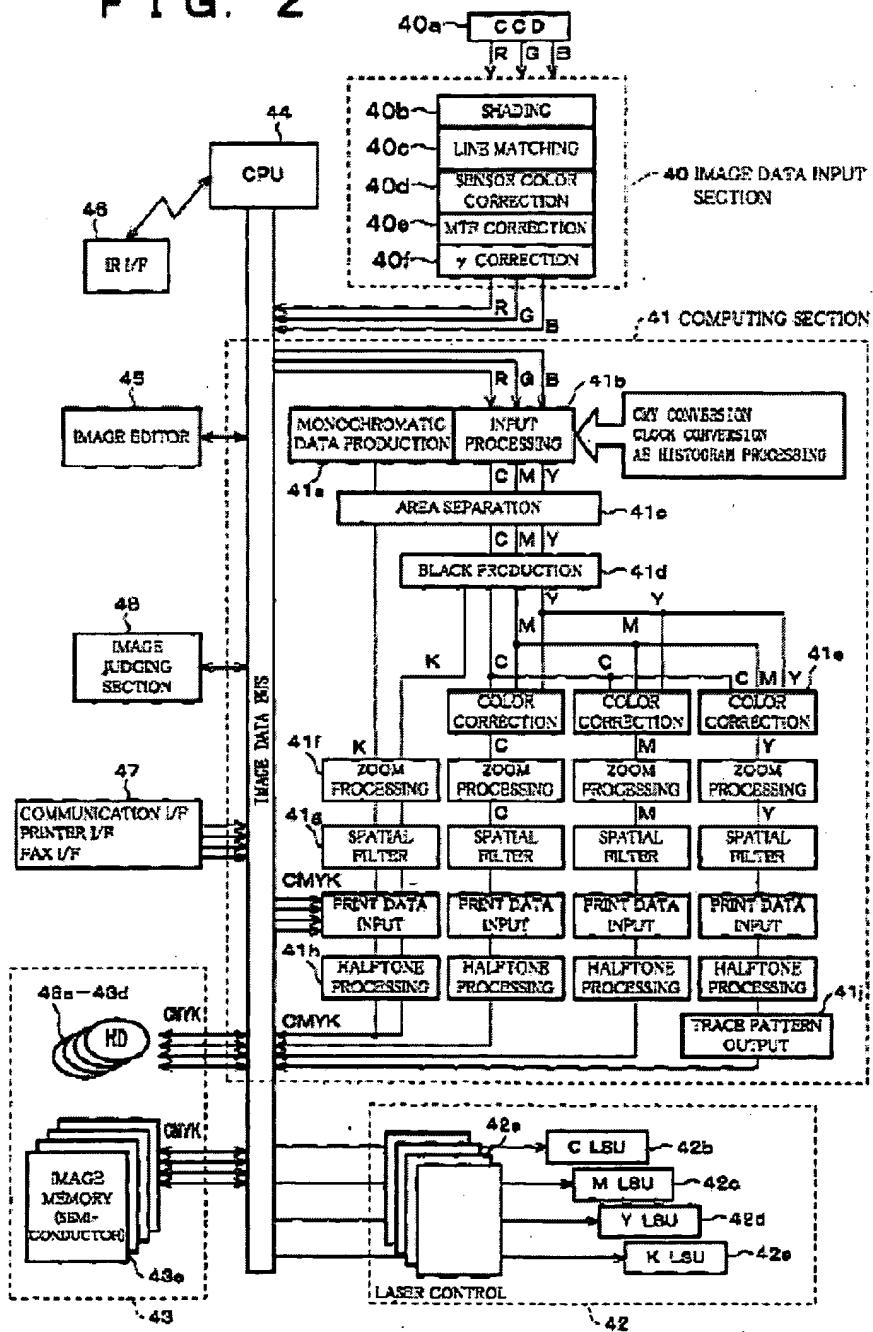
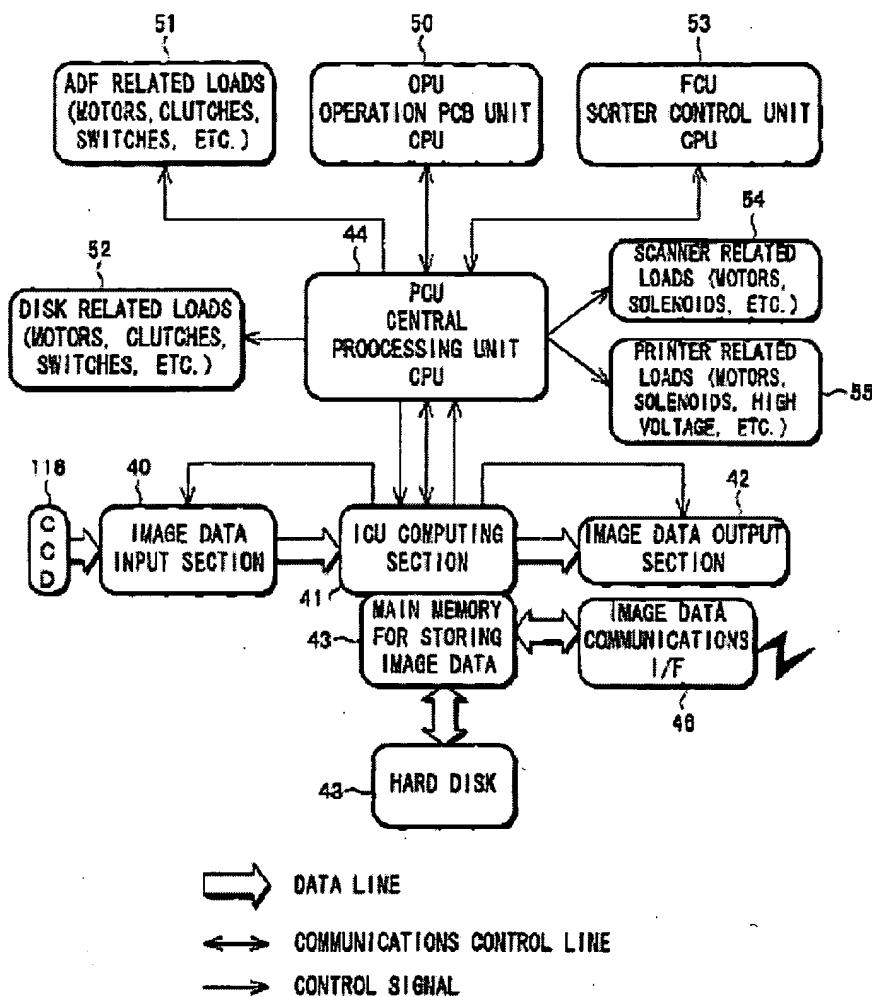


FIG. 3



Additionally, Takeuchi et al. teach using three registration marks in creation of the reference chart to enable more detailed correction of image distortion thereby providing more recording precision than the recording precision of the recording means (Takeuchi et al. – Description, Column 20, Lines 26-28, Lines 49-50). Given the same field of endeavor, specifically an image forming apparatus with an image correction system, it is apparent that one of ordinary skill in the art at the time the invention was made would

have been motivated to combine the analyzing system as taught by the combination above, with the analyzing system detailed steps as taught by Taka et al. in an effort to utilize the information gleaned from the measurements and analysis to correct the displacements accordingly (Taka et al. – Abstract).

43. **Claim 49** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claim 48** above, and further in view of **Sasahara et al.**, (JP 06-261156).

Komiya et al. teach the limitations of **claim 48** for the reasons above. Additionally Komiya et al. teach calculating and setting various correction data for the printer in advance based on multiple inputs (Komiya et al. – Figures 4A & 7, shown below), and avoiding interference by printing various regions based on which property is to be analyzed (Komiya et al. – Figure 15, shown below).

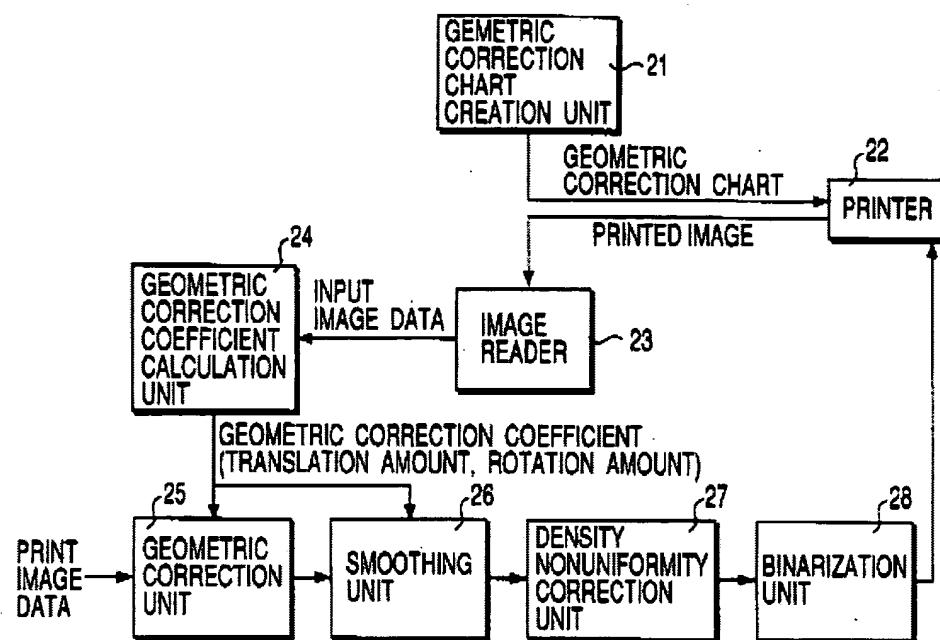


FIG. 4A

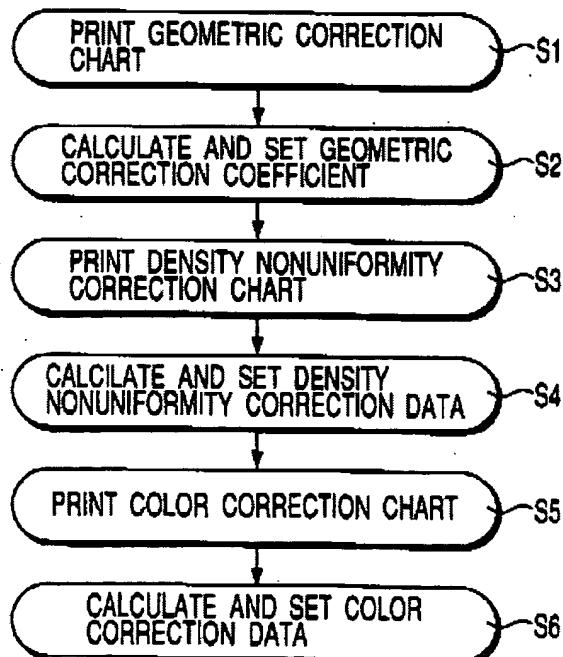


FIG. 7

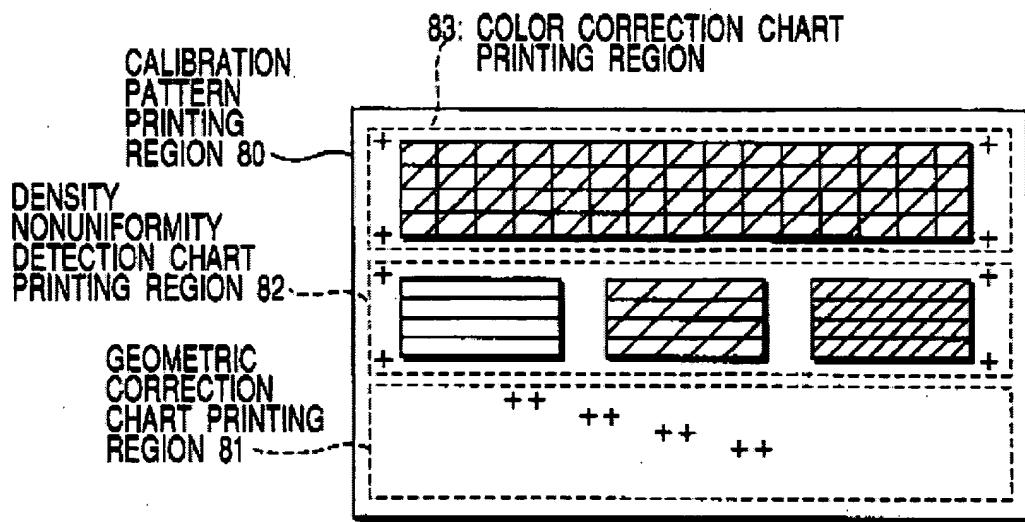


FIG. 15

Komiya et al. *do not* specifically teach the plurality of marks recorded based upon at least two kinds of the geometric property formats in advance. *However*, Sasahara et al. teach a plurality of marks recorded and the measurement and analysis performed beforehand (Sasahara et al. – Description, Paragraph 47, and Drawing 6 shown previously). Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the calculating and setting of various correction data as taught by Komiya et al., with the measurement and analysis performed in advance as taught by Sasahara et al. in an effort to properly evaluate the specific device being analyzed by providing the proper corrections at the appropriate time (Komiya et al. – Abstract, Lines 10-12).

44. **Claim 50** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Komiya et al.**, (US 6,287,027 B1) as applied to **claim 48** above, and further in view of **Taka et al.**, (US 7,106,942 B2).

Komiya et al. teach the limitations of **claim 48**, for the reasons above. Komiya et al. *do not* specifically teach the analyzing step of dividing the test chart into a plurality of chart components. **However**, Taka et al. teach the step of dividing the test chart into a plurality of chart components to perform a relative comparison between the properties of them (Taka et al. – Description, Column 12, Line 12, Figures 6(a) & 6(b) shown previously). Given the same field of endeavor, specifically an image forming apparatus with an defect detection system and correction means, it is apparent that one of ordinary skill in the art at the time the invention was made would have been motivated to combine the test chart, the analyzing system including the specific units and method of use as taught by Komiya et al., with the method of using the analyzing system that calculates and uses the center position of the plurality of marks as well as dividing the test chart as taught by Taka et al. in an effort to minimize the differences and displacements and better perform analysis (Taka et al. – Abstract and Description, Column 11, Lines 18 & 22-24).

Conclusion

45. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Castelaz (US 4,982,439 A) teaches a microstructure processor with marks adjacent to each other, spaced to allow discrimination between each mark. Yukawa et al. (US 5,655,031 A)

teach a method for determining attributes and points/marks at different positions on a chart with different areas. Komiya et al. (US 2003/00113034 A1) teach an image processing apparatus with related dot positions. Sakai et al. (US 6,771,842 B1) teach image skew detection method and correction thereof with scanners. Van Der Heijden (US 2004/0150861 A1) teaches a method and apparatus for calibration and a test original as well as cancellation out of variations and degradations. Ishiguro (US 2005/0036687 A1) teaches pixels corresponding to a center pixel of an isolated dot, and a density of pixels given an available area. Ebihara (US 2005/0024420 A1) teaches an image printing apparatus with a similar analyzing system and method. Ichitani (US2005/0094170 A1) teaches an image forming method and apparatus with XYZ data and a plurality of marks arranged in predetermined patterns. Haikin (US 7,038,811 B1) teaches integrating characterization information, target image, measurement store, color patch, and spatial information of the patch in a target image. Ishikawa (US 7,064,865 B2) teaches an image processing method and apparatus with isolated points, two colors, evenly spaced. Ohkubo (US 7,075,678 B2) teaches an apparatus, method and program that does device performance verification. Chiwata (US 2006/0214960 A1) teaches an image recording method and apparatus with marks arranged at the same intervals along at least one direction and a plurality of marks recorded by a plurality of recording means. Kawauchi et al. (US 7,114,792 B2) teach an apparatus for correcting errors for a recording apparatus and the method for correction. Tatsuta et al. (US 6,364,209 B1) teach a data reading apparatus with similar marking characteristics. Tasuta (US 6,446,866 B1) teaches an information reproducing system with similar characteristics. Higurashi et al. (US 6,538,705 B1) teach an image forming system with overlapping marks of the same and different colors. Ioka (US 6,558,006 B2) teaches an image

compensation apparatus and a diagrammed test image. Imade et al. (US 6,633,526 B1) teach a data recording and reproducing method as well as a data-recording medium. Ioka et al. (US 2004/0041863 A1) teach an image forming apparatus with a test chart, test chart reader, overlapped region, and a data storage unit. Komiya et al. (US 6,707,579 B1) teach an image formation apparatus with a unit for correcting irregularities having marks formed adjacent to one another and a plurality of chart components and recording means. Ioka et al. (US 6,789,872 B2) teach an image recording apparatus with a Test Pattern Controller, an Image Data Correction Unit, Recording medium Storage (RAM), Correction Data Generator, and a Test Pattern Reader. Ioka (US 6,814,448 B2) teaches an Image Capturing Section, Correction Data Sections, Test Image Storing Section, Image Correcting Section, Projector Section (Recording Section), and a Projection Screen (Recording Medium). Ioka et al. (US 6,843,610 B2) teach an image recording apparatus, which can correct recording position errors in two dimensions. Kaneko (US 6,871,931 B2) teaches a recording apparatus and correcting method as well as a sensor measuring a recorded test pattern. Ioka (US 6,883,893 B2) teaches an image recording apparatus that creates a test pattern and does position calculation while storing it in position memory. Kobayashi et al. (US 7,003,241 B1) teach an image-recording device and system with a plurality of marks adjacent to form a predetermined shape. Suzuki (US 4,675,696 A) teaches a recording apparatus with plural recording units, a detecting unit, which detects and corrects by reading a reference pattern formed by recording units. Katerberg (US 4,878,063 A) teaches a multicolor printing apparatus and method of correction. Ebihara (5,848,197 A) teaches an image pickup system with applicable marks and line sensors. Fukuda et al. (US 5,860,679 A) teach an information reproduction system and method with marks and unit vectors. Fukuda et al. (US

5,866,895 A) teach an information reproduction system with specific dot positions relative to the reference points. Wada et al. (US 6, 023,537 A) teach an image reading apparatus and position error measuring device. Matsui (US 6,050,731 A) teaches an image quality check apparatus and image reader with a step-by-step method. Maekawara et al. (US 6,121,993 A) teach an apparatus for forming an image producing marks in different colors in a predetermined direction with average mark density. Fukuda et al. (US 6,131,807 A) teach an information reproduction system with dots and dot read point calculations. Tasuta (US 6,282,319 B1) teaches a pattern and reading system with a reading unit, a block detection unit, and a reproduction unit. Kida (US 6,307,579 B1) teaches an error correction method for image forming apparatus with predetermined pattern scanned to provide correction values. Wotton et al. (US 6,497,522 B2) teach a transport belt with an array of perforations creating a vacuum type print media transport subsystem. Maki et al. (US 2004/0263603 A1) teach the conveying surface provided with air inflow ports to perform suction and hold the recording sheet to the belt. Teumer et al. (US 5,717,446 A) teach a liquid ink printer transport belt includes apertures for applying a vacuum to the recording medium and for the liquid ink printhead to purge ink through the apertures in the absence of the recording medium. Rasmussen et al. (US 5,992,994 A) teach a foraminous belt with a vacuum applied thereunder to pull the media onto the belt.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Zimmermann whose telephone number is 571-270-3049. The examiner can normally be reached on Monday - Thursday, 7:00am - 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Assouad can be reached on 571-272-2210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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JPZ



PATRICK ASSOUAD
SUPERVISORY PATENT EXAMINER